

*27. (NEW) A method for simulating model manipulation, comprising:
arranging a manipulation model into a manipulation arrangement, according to an
arrangement of a component model of a main model; and
determining whether the manipulation model in its manipulation arrangement can virtually
manipulate the component model, by comparing the main model to manipulation requirements of
the manipulation model.*

*28. (NEW) The method according to claim 27, further comprising determining
whether said arranging can be performed without interference between the main model and the
manipulation model.*

REMARKS

INTRODUCTION

In accordance with the foregoing, the specification and claim 5 have been amended. Claims 24-28 have been added. Claims 1-28 are pending and under consideration.

INFORMALITY IN CLAIM 5

The objected-to informality in claim 5 has been corrected.

REJECTION UNDER 35 USC §102(e)

In the Office Action, all of the claims were rejected as anticipated by Nozaki. As indicated on the filing receipt of the present application, the present application has an effective filing date of March 20, 1998. Nozaki was filed on April 28, 1998 and is therefore ineligible as a prior art reference under § 102(e), or under any other section. Withdrawal of the rejection is respectfully requested.

Nonetheless, the present invention is distinguishable over Nozaki. For example, claim 1 recites "simulation of the working for the standard part models with the working means model". Nozaki relates to arranging a three-dimensional view according to collisions between objects. Nozaki does not mention or suggest working a standard part with a working means.

NEW CLAIMS

New claims 24-28 have been added to include features that interrelate processes performed by aspects of the present invention.

CONCLUSION

In accordance with the foregoing, the specification and claim 5 have been amended. Claims 24-28 have been added. Claims 1-28 are pending and under consideration.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please AMEND the paragraph beginning at page 10, line 27, as follows:

Further, even if, during designing of an apparatus/equipment model in which a three-dimensional CAD system is used, design data are produced without performing such working as retrieval or relating operation of part models, since a simulation of working for standard part models arranged in the design data can be executed, a simulation can be performed also at an initial stage or in the [source of] designing stage. Consequently, there is an advantage that a simulation can be performed in the further upstream designing stage and [leakage of] checking for interference [checking] of an apparatus or equipment after completion of designing can be prevented.

Please AMEND the paragraph beginning at page 11, line 21, as follows:

The above and other objects, features and advantages of the present invention will become apparent from the following description and the appended claims, taken in conjunction with the accompanying drawings in which like parts or elements are denoted by like reference symbols.

Please AMEND the paragraph beginning at page 15, line 24, as follows:

The simulation apparatus 1 may [other] be constructed such that the working means model information storage section 3 stores information of one [ore] or more tool models which are models of actual tools and/or a hand model which is a model of a hand of a worker as the information regarding the working means model.

Please AMEND the paragraph beginning at page 23, line 6, as follows:

Further, even if, during designing of an apparatus/equipment model in which a three-dimensional CAD system is used, design data are produced without performing such working as retrieval or relating operation of part models, since a simulation of working for standard part models arranged in the design data can be executed, a simulation can be performed also at an

initial stage or in [the source of] a designing stage. Consequently, there is an advantage that a simulation can be performed in the further upstream designing stage and leakage of interference checking of an apparatus or equipment after completion of designing can be prevented.

Please AMEND the paragraph beginning at page 26, line 18, as follows:

Meanwhile, the working means model includes an actual tool model (screwdriver, spanner and so forth) for use to work such a standard part model as described above, a hand model to be used when a worker works directly with [its] his or her hand, and so forth.

Please AMEND the paragraph beginning at page 30, line 12, as follows:

Similarly, as seen in FIG. 7, the reference position of a model 32B of a screw as a standard part model which is fastened by a hexagon wrench is a position 32B' which makes a reference when the model [32A] of a hexagon wrench works the model 32B, and the standard part library 32 can store information of the reference position 32B' (reference position information) together with model data and the aforementioned attribute information of the model 32B of a screw.

IN THE CLAIMS:

Please AMEND and ADD to the claims in accordance with the following:

5. (ONCE AMENDED) A simulation apparatus as claimed in claim 1, further comprising an interference checking section for checking interference of the working means model while said working simulation execution section executes a simulation of the [working for the] standard part models working with the working means model.

24. (NEW) An apparatus for simulating model manipulation, comprising:
a main model comprised of a manipulatable component model;
a manipulator model, separate from the main model, capable of virtually manipulating the manipulatable component model according to manipulation requirements of the manipulator model;

arrangement information describing an arrangement of the manipulation model when manipulating the component model; and

a processing unit determining whether the arranged manipulation model can virtually manipulate the component model by comparing the arrangement information and manipulation requirements of the manipulation model to the main model.

25. (NEW) The apparatus according to claim 24, wherein the processing unit also determines whether the manipulation model can be virtually moved to its arrangement without interference between the moving manipulation model and the main model.

26. (NEW) The apparatus according to claim 25, wherein orientation information is associated with the component model, and determining whether the manipulation model can be virtually moved to its arrangement further comprises determining whether the manipulation model can approach the component model according to the orientation information, without interference from the main model.

27. (NEW) A method for simulating model manipulation, comprising:
arranging a manipulation model into a manipulation arrangement, according to an arrangement of a component model of a main model; and

determining whether the manipulation model in its manipulation arrangement can virtually manipulate the component model, by comparing the main model to manipulation requirements of the manipulation model.

28. (NEW) The method according to claim 27, further comprising determining whether said arranging can be performed without interference between the main model and the manipulation model.